PA29
EARLY OR LATE? WHEN SHOULD WE DO KNEE REPLACEMENTS FOR OSTEOARTHRITIS?
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Aim: To compare the 5-year outcomes of total knee replacement in younger and older people, and in those with relatively mild or severe disease at the time of surgery.

Methods: The Bristol Knee Registry contains data on patients coming to TKR at a large UK centre between 1974 and 1998. Data on pain and function were collected pre-operatively and at varying time points thereafter. Complete pre-operative and 5-year data were available on 812 patients undergoing primary TKR. Outcome was related to age, gender and disease severity.

Results: 86% of patients coming to TKR in this group had a diagnosis of OA. The majority showed a major improvement in pain and disability after surgery. However, there was little or no change in 82 cases; there were no differences in age, gender, diagnosis or pre-operative status between this group of 'non-responders' and the remainder of the cohort. Men had significantly less disability than women, both pre and post-operatively ($p<0.001$). There were significant differences in the amount of gain in response to TKR in different age and severity groups. Up to the age of 75 the amount of gain increased with increasing age, but in older groups there was much less improvement following TKR (p=O.O1). Those with the most severe disease pre-operatively gained the most as a result of surgery, but never 'caught up' with the less severe group.

Conclusion: Most people with knee OA gain greatly from TKR, but some 10% get little benefit; the reasons for this remain unknown. As shown in other countries, women have more pain and disability than men at the time of surgery. Older people *(>75)* gain a lot as a result of surgery, but not as much as those who are younger. Those with the most severe disease at the time of surgery gain most, but still had more pain and disability 5 years after TKR than those less severely affected. These data suggest that many patients, particularly women, wait too long.

PA30
INTRINSIC REPAIR OF CARTILAGE DEFECTS: A CHALLENGE FOR THE FUTURE?
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Aim: To improve the intrinsic repair properties from the walls of hyaline cartilage surrounding an articular cartilage defect.

Methods: Human articular cartilage from femoral condyles was obtained at autopsy, and diced into small fragments measuring approximately
0.5x0.5 x0.5mm. The tissue pieces were either enzymatically pretreated for 15 min (hyaluronidase l00mg%, chondroitinase ABC 10 IU/ml, IL-1
50pg/ml, pronase l00mg%, or a combination of IL-1 with either hyaluronidase or chondroitinase ABC) before being put in a 0.5% fibrin gel, or cultured in the fibrin gel with growth factors in the nutrient medium (TGFbetal Song/mi or bFGF l00ng/ml), or cultured in fibrin gel after enzymatic incubation and with growth factor in the nutrient medium. Each culture contained 5 cartilage pieces and each set up was performed in 5-fold. The outgrowth from the cartilage pieces was monitored by phase contrast microscopy. After 2 weeks in culture the fibrin gel was dissolved and the cartilage pieces enzymatically digested. The DNA-content of the two solutions was measured separately (Hoechst 33258 dye method).

Results: Under phase contrast microscopy an outgrowth was seen from the cartilage fragments into the surrounding fibrin gel in all set ups. The DNA-content remained unchanged ($p \geq 0.05$) in the cartilage fragments when compared with control situation at start and at day 14, except when TGFbeta1 was added to the nutrient medium where an increase was seen ($p<0.05$). In the surrounding fibrin gel a significant increase in the DNA-content was measured when the cartilage pieces had been pretreated with hyaluronidase or with IL-I, when TGFbeta1 was added to the nutrient medium, or in the combination hyaluronidase or chondroitinase ABC with TGFbeta1.

Conclusion: The outgrowth and proliferation of chondrocytes from native cartilage into a matrix in a cartilage defect can be stimulated by enzymatic pretreatment of the cartilage walls with hyaluronidase or IL-1, and with the supplement of TGFbetal in the nutrient medium (articular defect). This could have its implications for the treatment of cartilage lesions in the future.

PA31
FIFTEEN TO SEVENTEEN YEAR FOLLOW-UP OF THE UNCEMENTED SPONGIOSA METAL SURFACE (SMS) TOTAL HIP ARTHROPLASTY
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To assess the long-term success of total hip arthroplasty inserted without cement 165 consecutive hip arthroplasties using the Spongiosa Metal Surface (SMS) total hip replacement were reviewed.

Material and Method: The SMS prosthesis has a macroporous surface structure with a pore size of 1-2mm and a pore depth of up to 3mm similar to that of cancellous bone. Surface structure and implant core are molded in one piece. The prosthesis includes a metal hemispheric acetabular component with a polyethylene liner, a stem in form anatomically adapted to the proximal femur with a Morse taper and a 32mm ceramic head. From 1983 to 1985 165 SMS prostheses were implanted into 159 patients. No patient was lost to follow-up. At the time of latest follow-up, 29 patients had died unrelately to surgery and 13 hips had been revised. Of the remaining 87 patients with 90 total hip arthroplasties were clinically examined (minimum follow-up time was 15 years, mean 196 months), and a.p. and lateral radiographs were taken and analyzed for signs of osteolysis and stress shielding. 33 hips were followed by telephone. A survival rate was calculated using the Kaplan-Meyer method.

Results: Thirteen hips had to be revised. Both components were revised in one case of infection, the femoral stem only in 10 hips because of aseptic loosening, and in one hip for stem fracture. In one case the cup was revised for aseptic loosening. The survival rate was 88% at 15-17 years. Clinical follow-up of 87 patients using the Harris Hip Score showed a median of 89 points. Analysis of recent radiographs did show a variable degree of stress shielding in 21%. Periarticular heterotopic ossifications were apparent in 13 hips (10%). In no case did localized endosteal bone loss or stress shielding lead to revision or radiographic signs of loosening.

Discussion: Bony ingrowth into the macroporous surface structure of the Spongiosa Metal Surface (SMS) hip prosthesis apparently provides a good shield against osteolysis. Although we did see stress shielding in the area of the greater trochanter frequently, this did not have any negative influence on the long-term succes of the implant. The long-term survivorship analysis showed 88% survival of the SMS prosthesis at 14 years with good clinical results.